

ABSTRACT OF THE DISCLOSURE

A transfer mechanism is provided for controlling a magnitude of clutch engagement force exerted on a multi-plate clutch assembly operably disposed between input and output members. The transfer clutch includes an actuator fixed for rotation with the input member, a piston slidably disposed within a piston chamber of the actuator and selectively engaging the multi-plate clutch assembly, a pump in fluid communication with the piston chamber, and operably engaged with the input member and the output member. A rotational speed differential between the input member and the output member induces pumping action for pumping a magnetorheological fluid through the piston chamber. An electromagnetic coil is operably disposed between the piston chamber and the pump. The electromagnetic coil is selectively energized for manipulating a viscosity of the magnetorheological fluid to induce a back pressure within the piston chamber, thereby inducing axial movement of the piston for engaging the clutch pack.